Adopting Problem-Based Learning (PBL) in the Transformation of the English Language Curriculum in the Digital Era: A Review of Challenges and Future Directions

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Abstract

The rapid advancement of digital technologies is reshaping English language teaching and curriculum planning. Based on a review of recent literature and a conceptual analysis of emerging research trends, this article explores how problem-based learning (PBL) can facilitate the transformation of the English language curriculum in the digital age. Drawing on recent research, the article explains how tools such as artificial intelligence, learning management systems, and online platforms can make PBL more interactive, flexible, and engaging, while helping students develop digital literacy and essential 21st-century skills. The article also describes different forms of PBL—pure, blended, and digital—and compares their applications within English language curricula across Asia, Europe, North America, and the Global South. Key challenges are discussed, including uneven access to technology, inadequate teacher training, and difficulties integrating PBL with existing curricula. Finally, the article looks to future directions, emphasizing the necessity of AI-supported PBL, sustainable and inclusive curriculum design, and long-term research. In conclusion, the article argues that combining digital technologies with PBL provides a promising and practical path to building a future-oriented English language education.

Keywords: *problem-based learning, English language curriculum, digital transformation*

1. Introduction

With the continuous evolution of technology, teaching and learning English have expanded beyond conventional practices such as chalkboards and pencils. They increasingly incorporate artificial intelligence, hybrid learning models, and all sorts of educational software (Hatfield, 2025). This integration of technology not only support classroom delivery by teachers, but also benefit students achieve the desired learning objectives (Zou et al., 2025). Contemporary English language syllabi are less centered on language competency and more concerned with the 4Cs of 21st-century competencies, i.e., critical thinking, creativity, communication, and collaboration (Jelodari et al., 2025). Simultaneously, teaching style has changed over to student-centered learning, active-learning that develops better learner involvement and self-direction in learning (Bhardwaj et al., 2025).

Nevertheless, while Problem-Based Learning (PBL) is widely recognized as an effective teaching method, it is not widely or consistently implemented in English language curricula worldwide. Reports from organizations such as UNESCO (2023) and OECD (2021) indicate that, while many institutions have expanded their digital infrastructure, meaningful pedagogical transformation toward student-centered and inquiry-based learning remains limited. Similarly, a study published in the *Pertanika Journal of Science & Technology* shows that although universities have introduced more digital tools, teaching methods often remain traditional because many teachers lack proper training and support to use technology effectively (Oladele, 2023). This shows that using technology does not automatically lead to real changes in classroom teaching. In addition, numerous researchers discovered that there is an excessive amount of deficiencies in teaching approaches (Afifi, 2025; Djampulatova, 2025; Paragae, 2023), training of teachers (Wolff et al., 2024 and Qureshi, 2023), and educational policy (Ahluwalia, 2025; Solehudin, 2024; Zancajo et al., 2022) in the current educational digital transformation. Firstly, Hadiyanto et al., (2025) observed that, in a number of

EFL states, the instruction of English is still based on the conventional student-friendly approach, with the result being students, after spending years learning English, achieving high test results without the capacity to speak English efficiently. English has also been turned into a means to measure the academic skills of students in these countries, and the ability to communicate using it has disappeared (Kohnke et al., 2025). Moreover, the paper by Mahara (2024) and Caneva et al. (2023) showed that some of the teacher training programs, trainers are not able to pay attention to the incorporation of technology in teaching, which later leads to teachers inability to make use of technology in their daily teaching. Finally, Johansen et al. (2022) demonstrated that some rural areas in the Global South do not have internet connectivity and thus the change in educational technology remains an immensely tedious and daunting task in such locations. The students within these regions are significantly disadvantaged when compared to their urban counterparts in terms of academic advancement.

Accordingly, problem-based learning has a fundamental role in the creation of English language curricula because it involves the learners in practical problem solving activities (Tanna et al., 2022). PBL is made even more effective when combined with digital solutions, including artificial intelligence, hybrid instruction, and interactive educational systems to increase student attention and interest (Mulenga et al., 2025). Such integration is advantageous for numerous stakeholders: students receive critical thinking, communication, and self-directed learning; support is offered to teachers to provide a vibrant lesson; the curriculum developers have an opportunity to use more research-based models; and policy makers have examples of scaling, significant curriculum innovation (Wagino et al., 2024).

The present article aims to examine the combination of contemporary technologies with PBL within curricular development and design in English education. This article addresses the following research question:

- What challenges, opportunities, and future directions influence the successful implementation of problem-based learning in digitally transformed English language curricula?

2. Digital Transformation in English Language Teaching

Technological advancement has greatly changed the modern-day lifestyle and it can be observed that the two are especially influential in the education sector as they both play a fundamental role in achieving a sustainable future (Aithal et al., 2023). In the post-pandemic era, the teaching of the English language has experienced significant technological changes. Almost every aspect of teaching has included digital elements such as classroom procedures, curriculum development, resource creation, and student assessment. (Han, 2024). These technologies allow teachers to better track the academic performance of their students better and develop more responsive and evidence-informed pedagogical approaches. As a result, language teaching has begun to incorporate more and more learning management systems (LMS), educational technologies (EdTech), virtual reality (VR), and even AI-powered teaching aids (Munagandla et al., 2024).

Chu and others (2025) have shown that artificial intelligence is radically changing university curricula through allowing the use of data driven personalization, which enhances student performance, as well as making educational programs more responsive to the changing labor market requirements. Duolingo has already become the most popular language learning platform globally by providing its users structured language courses, clear proficiency levels, and engaging and gamified learning activities (Harahap and Daulay, 2023) before these improvements. Harahap and Daulay (2023) emphasized that Duolingo plays a vital role in assisting teachers with the challenge of designing curricula, where most teachers view it as a very powerful and useful element of the modern language classroom. Furthermore, the new emerging technologies in digital learning are forecasted to become even more revolutionary. According to Gu (2025), virtual reality

(VR) technologies may help ease foreign language anxiety indirectly due to increased confidence and perceived fluency of English among learners, and thus, may be regarded as effective in reducing the effects of anxiety. By contrast, Samala et al. (2025) warn that the implementation of VR int language teaching is associated with considerable difficulties that cannot be overcome without considerable effort and special training of the course developers, and this process strongly relies upon the institutional support from academic organization.

Amalia (2024) explored the effects of two different authoring tools, SoftChalk and Hot Potatoes, in an integrated learning management system (LMS) on reading comprehension scores in the ESL course offered to second-year university students. The study studies revealed that Hot Potatoes was more successful in enhancing the reading comprehension scores of the students and was more functional. The incorporation of LMS into courses can enhance language learning skills among students and effectiveness may be enhanced, yet according to Han et al. (2024), it has numerous limitations and challenges to use LMS in courses. For example, one of the major challenges is motivation as most of the students are not able to act and react promptly on LMS; at times, they lack the focus to learn on the system and become distracted. Apart from these features, Apridayani et al. (2023) reported that learning environments have also experienced a dramatic change with traditional classrooms being replaced by diverse online platforms. Simultaneously, there has been a shift in evaluation practices, which is now conducted through a single exam to online reports, online group discussions, and oral tests through AI-powered Q&A sessions.

3. Various Types of Problem-based Learning

3.1 Pure Problem-based Learning

Since problem-based learning (PBL) as a form of instruction is based on the idea of placing learning into something that is meaningful to the learners, this method has been practiced in the past. It is based on the significant pedagogical approach of Dewey (1938) and Kilpatrick (1918; 1921), where practical experience is the key element. Furthermore, PBL facilitates learning by requiring students to address real-life issues and think about them (Barrows and Tamblyn, 1980). It also creates an opportunity to learn by having students work on real-life issues and reflect on what they have experienced (Collins, 1989; Hmelo and Ferrari, 1997). A reconsideration of problem-based learning(PBL) is appropriate due to the recent emphasis on critical thinking and lifelong learning in classroom reform. The fact that PBL is a form of active but easily transferable learning makes it an effective way of promoting students to motivate them (Santos-Meneses et al., 2023).

At present, many universities already have incorporated problem-based learning in their curricula. Other universities use traditional problem-based learning and others apply problem-based learning related to their specific specializations. Two of the oldest and most famous ones were the University of Maastricht and Temasek Polytechnic University. First, as stated on the Maastricht University website, it uses the traditional 7-step approach to problem-based learning across all its education programmes, and its medical school was the second in the world to do so. The idea underlying Maastricht University PBL (Problem-Based Learning) is that students should take personal responsibility for their academic development and become lifelong learners. Tutor groups are central to the curriculum of a university, with each group being 14-16 students who meet weekly once or twice. There is a post-discussion of the current issue and a pre-discussion of the next topic. A student serves as the chair of the discussion, while faculty provide supervision, feedback, and guidance where required. At Maastricht University, a 7-step approach to PBL is used: (1) clarifying unfamiliar terms, (2) problem definition, (3) brainstorming, (4) analyzing the problem, (5) formulation of learning issues, (6) self-study, and (7) reporting.

Similarly, the 7 Step Problem-Based Learning (PBL) in the Singaporean Temasek Polytechnic college curriculum has made use of this system since 1998. Professor Chan (2026) from this college stated,

the principle that the university has is that the method of problem-based learning is a new type of learning that not only transferring knowledge but developing many important skills. For more than two decades, PBL has been actively introduced into different fields of study to encourage independence in learning, self-reflection, and problem-solver capabilities among students. To aid students in solving problems systematically, the university provides them with a seven-stage PBL framework, along with the FILA (i.e., Facts, Ideas, Learning issues, and Action plan) approach to thinking.

Historically, the practical problem-based learning is rooted in the late 1970s at McMaster University School of Medicine in Canada, initiated by Barrows (1986), as it aimed to reform traditional education of doctors, which largely depended on lectures delivered by teachers and memorization. From the mid-1980s, PBL (Problem-Based Learning) started being applied to subjects like engineering (Cawley, 1989), business (Sexton and Bowman, 1984), and teacher education (Barrows, 1986), to develop self-directed learning and problem-solving skills of students. In fact, by the mid-2010s, an increasing number of language-training programs that would include problem-based learning (PBL) into their curriculum and instruction. For instance, Othman et al. (2013) designed experimental research, which was then utilized to compare and contrast the effectiveness of problem-based learning (PBL) and traditional teaching methods in ESL courses. The findings revealed that both groups of students enhanced their understanding of the course material. Nevertheless, regarding English language proficiency, the PBL group achieved a great deal of advancement, particularly when it came to writing, as well as presenting their arguments and using supporting examples to back them up. More recently, educational technologies such as applications and online platforms have been integrated into PBL to assist students reach their desired learning objectives (Smith, 2022).

3.2 Hybrid Problem-based Learning

An education model called Hybrid Problem-Based Learning (PBL) is a combination of traditional teaching methods and problem-based learning. Additionally, it begins with real-life scenarios that present complex problems that prompt students to think actively and learn cooperatively (Ghannam and Chan, 2023). However, as opposed to traditional PBL, teachers give assistance to students in comprehending important information by means of lectures, mini-lectures, or guidance (Sánchez-Muñoz et al., 2022). Simultaneously, the model maintains its learner-centered focus by highlighting the independence and practical skills of students. Hybrid problem-based learning facilitates the development of problem-solving capabilities, critical thinking, and teamwork skills among students (Xie et al., 2025).

According to some experts, hybrid PBL can help ensure that knowledge structures are more systematic as it integrates traditional PBL with other instructional techniques, including mini-lectures, lecture methods, and other instructional strategies, like project-based learning or brain-based instruction (Kassem, 2018; Siregar, 2025; Liu, 2025). Many of the studies have also followed this approach to help the participants in attaining their academic goals successfully regardless of whether in the process of teaching and learning English or other subject. Various scholars have utilized hybrid PBL in different ways, as shown in Table 1:

Table 1 The Use of Hybrid PBLs by Different Scholars

Name and Year	Approaches	Target Population	Results
Carrió et al. (2011)	• Hybrid Problem-Based Learning (H-PBL)—PBL activities integrated into ~20 % of the curriculum • Lecture-Based Learning, (LBL) as comparison	Undergraduate biology students	• H-PBL did not negatively affect factual knowledge recall • H-PBL help develop other professional skills
Kassem (2018)	• Hybrid Problem-Based Learning (H-PBL) applied to an EFL speaking course • Combined with lectures	First-year English Department students at Prince Sattam Bin Abdulaziz University, Saudi Arabia	The H-PBL approach was much better in enhancing student speaking skills and motivation; they are more self-directed and independent.
Baresh et al. (2019)	Hybrid Problem-Based Learning (HPBL) combining alternating traditional and PBL lessons	30f irst-year undergraduate Libyan EFL students	• Following 9 weeks of HPBL, the level of students English speaking skills increased in fluency as well as grammar, comprehension, vocabulary, confidence, intonation and pronunciation. • It shows HPBL is effective for EFL speaking improvement
Zhao et al. (2020)	Combined PBL + Case-Based Learning (CBL) approach vs. traditional lecture-based teaching	354 fourth-year clinical medicine students and 232 residents	• The PBL CBL group demonstrated greater rise in knowledge and case analysis scores and better rating on motivation, understanding, interaction, clinical thinking, self-learning, teamwork, and communication as contrasted with the traditional group. • The traditional group consumed more study time.
Qondias et al. (2022)	Multicultural Problem-Based Learning (PBL) model integrated into thematic instruction	165 elementary school students	Compared with the traditional techniques, the multicultural PBL model proved to be effective in terms of enhancing the social attitudes and increasing the level of critical thinking of students

3.3 Digital Problem-based Learning

Mistry et al. (2019) found that digital problem-based learning is a teaching model that involves problem-focused pedagogy and digital technology. This approach begins by presenting students with authentic or situational problems to use as starting points to lead them to actively investigate and address problems. Learners utilize online learning networks and digital technologies to access information, engage in discussion, and create knowledge. The main role of teachers is to be facilitators and guides, not transmitters of knowledge in the conventional sense. The flexibility of learning resources, its interactivity and accessibility, is increased due to digital technology. These digital PBL frameworks are instrumental in fostering student problem-solving capabilities, self-learning skills, and cooperative competencies.

Within the last few years, there has been a growing tendency among scholars to implement digital PBLs as a way of enhancing efficiency in student learning. Through the application of different software, technologies, and online platforms, students have obtained numerous positive outcomes. First, the study was undertaken by Hasan (2025) and his team. The study had a quasi-experimental post-test-only control group. The findings indicated that there was statistically significant effect which can be interpreted to indicate that digital tools (Canva and YouTube) in PBL increased the ability of students to utilize the concept of digital literacy. In addition, Peerapolchaikul et al. (2019) explored the attitudes of preclinical medical students toward the implementation of Moodle into their PBL syllabus. The majority of students perceived that Moodle facilitated self-study and access to learning materials but also believed that it could be improved in aspects such as interaction and critical thinking. Furthermore, Bai et al., (2021) discovered that a digital problem based learning model in a course of programming in Python had a significant positive impact on computational thinking concepts and perspectives of students in comparison with the conventional lecture-practice approach. Conversely, Taesotikul et al. (2021) demonstrated that incorporating gamification played an important part in enhancing the academic results and learning capabilities of the pharmacy students in the problem-based learning environment. Moreover, student participation and satisfaction were higher than those reported in traditional PBL settings. Finally, Susanne et al. (2014) explored the manner in which the online digital tools and video (including online tests, peer assessment tools, and Google Classroom) facilitated international problem-based training of the Canadian and Hong Kong medical students. It was found that applying these digital technologies was beneficial in qualitative terms in regard to improving the communication competencies of students, as well as encouraging the cross-cultural interaction. Table 2 summarizes previous studies on the use of digital tools within digital PBL environment. As much as the body of knowledge on problem-based learning (PBL) as part of the English curriculum planning has been growing, there is a significant gap in the literature regarding the digital PBL implementation on the English curriculum.

Table 2 Categorized Empirical Studies on Digital Problem-Based Learning (PBL)

Category	Study	Educational Context	Digital Tools / Intervention	Research Design	Key Findings
Conceptual Framework	Mistry et al. (2019)	General higher education	Online learning networks; digital platforms	Conceptual analysis	Digital PBL integrates problem-focused pedagogy with technology; enhances flexibility, interactivity, accessibility; promotes problem-solving, self-directed learning, and collaboration.
Digital Literacy Development	Hasan (2025)	Higher education	Canva; YouTube	Quasi-experimental (post-test-only control group)	Significant improvement in students' digital literacy skills through digital PBL.
Learning Management Systems (LMS)	Peerapolchaikul et al. (2019)	Preclinical medical education	Moodle	Survey-based study	Moodle supported self-study and access to materials; improvements needed in interaction and critical thinking.
Computational Thinking	Bai et al. (2021)	Python programming course	Digital PBL model	Comparative study	Digital PBL significantly improved computational thinking compared to traditional lecture-practice methods.

Gamification in PBL	Taesotikul et al. (2021)	Pharmacy education	Gamified PBL environment	Experimental study	Gamification enhanced academic performance and learning capabilities.
Cross-Cultural & Communication Skills	Susanne et al. (2014)	International medical education (Canada & Hong Kong)	Online tests; Peer assessment tools; Google Classroom	Qualitative study	Improved communication competence and cross-cultural collaboration.

4. Conceptual Frameworks: Digital Transformation–PBL Integration in the English Language Curriculum

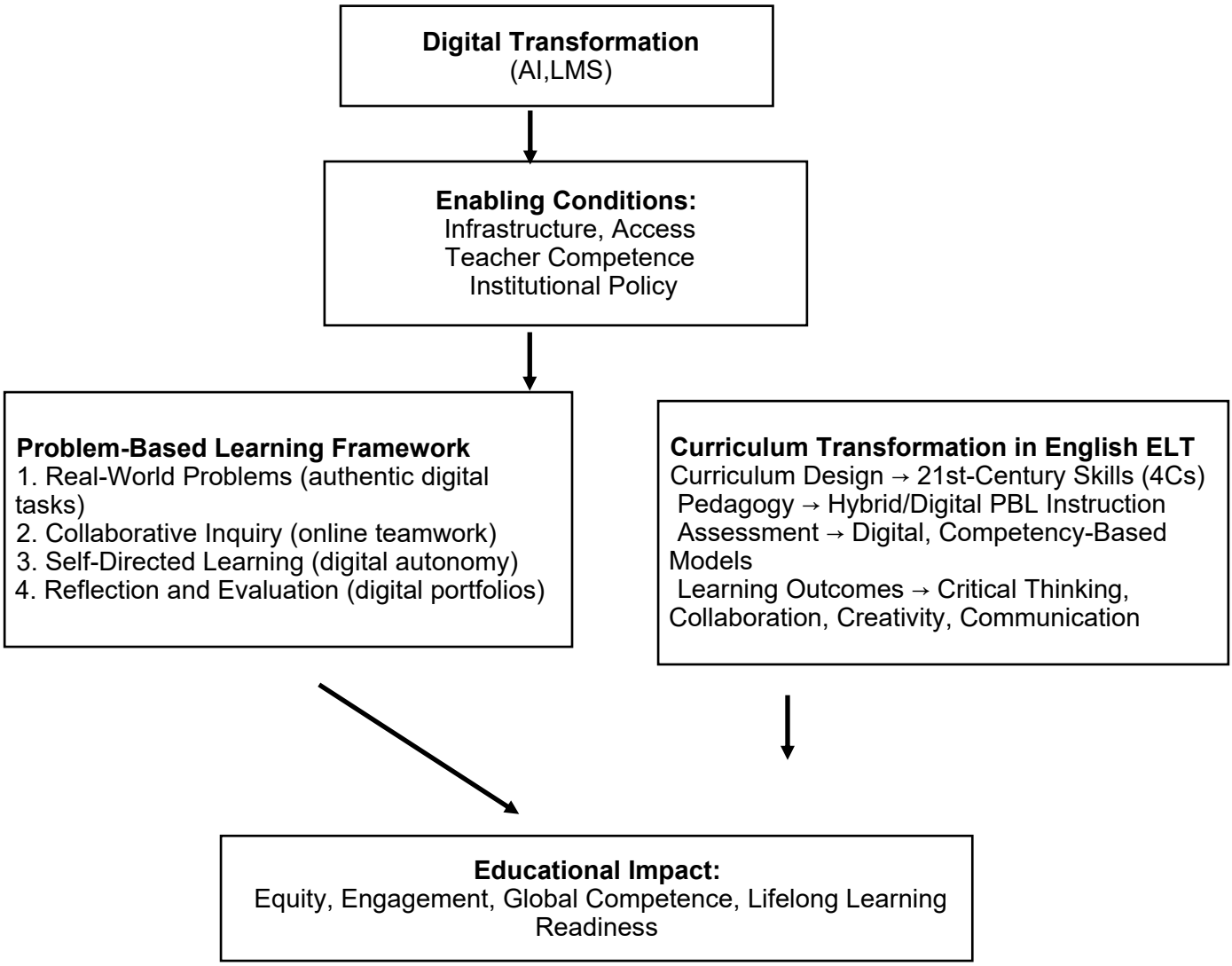

Figure 1 Conceptual Framework: Digital Transformation—PBL Integration in English Language Curriculum

The diagram in Figure 2 explains how digital transformation and problem-based learning (PBL) can be applied synergistically during English language lessons. Digital transformation supplies the technical, tool-related, and institutional resources necessary to adopt PBL, including online platforms and resources, online courses, and interactive learning settings. This support allows PBL to empower students to actively explore the world, collaborate with others, and take ownership of their learning process. By integrating digital transformation and PBL, curriculum design transcends conventional teaching designs, enabling students to acquire 4Cs: critical thinking, collaboration, creativity, and communication with a provision of a more open-minded, adaptive, and future-focused education (Herdiani, 2020).

5. Findings and Discussions

5.1 Digital Platforms Supporting Collaborative PBL

Digital platforms are at the core of digital English lessons because they enable collaborative problem-based learning (PBL). Zoom and Webex are examples of tools that enable real-time communication, group problem-solving, and oral practice, whereas Padlet, Google Classroom, and Seesaw are examples of platforms that facilitate idea sharing, peer feedback, and asynchronous cooperation. The Digital PBL method was applied by Chimmalgi et al. (2022) to enhance the ability of students to learn English in the context of the Covid-19 pandemic. The researchers shared teaching materials via various LMS platforms whereby students could hold online discussion in English and even conduct online debate. The academic outcomes were remarkably positive, demonstrating a significant improvement in student performance. Similar findings were reported by Kristina et al. (2021), who also applied the concept of a Digital PBL model to enhance the English speaking abilities of vocational school students. Through the combination of online materials, the creation of online forums, and the application of an online testing system that resulted in high student satisfaction. Hence, learning management systems (LMS) can help organize project tasks, resources, and assessment, and allow students to control of their own learning more autonomously. Combined, these platforms help take PBL into the physical classroom, building flexible interactive learning spaces that support sustained collaboration and authentic language use (Siripipattanakul et al., 2023).

5.2 Teacher Roles and Digital Competencies in Implementing PBL

Problem-based Learning (PBL), when integrated into the digital setting, has redefined the teacher who is no longer a conventional teacher but a facilitator, designer, and mentor (Azzahra and Nurkamto, 2024). Digital literacy is required by teachers in the 21st century, such as choosing suitable platforms, crafting effective problem situations, and facilitating online teamwork (Barell, 2010). Successful application of digital PBL also demands that teachers should acquire teaching abilities, including developing learning scaffolds, observing group processes and ensuring prompt feedback. Nevertheless, Kek and Huijser (2011) note that without sufficient preparation and institutional backing, teachers can find it difficult to reconcile the technological requirements with instructional intentions, which underscores the significance of ongoing professional growth.

It is evident that the given table shows the way teachers plan Digital PBL as the role of the teacher is combined with technology, and it offers the learner a more dynamic learning model.

Table 2 GEN020: English 2 Course Schedule at Krirk University

Weeks	Focus & PBL Themes	Problem's Name	Learning Objectives	Digital & Learning Activities
1	Course Introduction & Digital English		• Activate prior English knowledge • Build basic communication skills • Introduce self-directed learning	• Online lectures (LMS/Zoom) • Padlet discussion • Diagnostic task (Google Forms)
2	PBL Orientation	Toy-Ting, I Love You	• Practice contextual English • Understand PBL steps • Prepare for academic discourse	• PBL workshops • Group formation via LMS • Digital brainstorming
3–5	Problems 1–3 (Nature, Health, Social Issues)	1.Nature Is Angry 2. Yoko's Family 3.Can I eat it?	• Develop fluency and accuracy • Apply English to real-life problems • Strengthen collaboration	• Online research • Zoom breakout discussions • Digital posters, blogs, reflections
6	Language Focus: Questions & Tenses		• Improve grammatical accuracy • Support PBL communication	• Interactive grammar tools (Kahoot/Quizziz) • Collaborative writing
7–9	Problems 4–6 (Food, Finance, Culture)	4.Can I Eat That? 5.Hua'and His Fellows 6.A Trip to India	• Enhance critical thinking • Practice functional & interpersonal English	• Digital case analysis • Infographics & storytelling • Group presentations
10–11	Interview & Roleplay Simulations		• Prepare for workplace communication • Increase confidence and fluency	• Online mock interviews • Digital roleplay videos • Peer feedback
12	Writing Techniques & Reflection		• Develop academic and practical writing • Reflect on lifelong learning	• Writing workshop (Google Docs) • Digital portfolio submission

During the course, students start studying the basics of problem-based learning (PBL) and how it can be applied, followed by training in field workshops. On a weekly basis, the teacher utilizes various technological solutions (platforms, tools and applications) that were integrated into PBL in order to facilitate their teaching. The technologies can be used by the lecturer to integrate resources, organize students, and deliver online tests. The professional responsibilities and pedagogical duties of educators have undergone a radical transformation. 21st century skills are improved among students, which are attained via online research

and information integration. In each problem cycle, students are required to publish or present their findings on online platforms after completing a systematic literature review and producing a formal academic paper. This requirement ensures the integration of research-based inquiry with digital dissemination practices. For further illustration of sample problems applied in this course, readers are directed to the doctoral dissertation by Han (2020).

5.3 Student Engagement, Motivation, and Digital Literacy Outcomes

Extensive research have shown that digital problem-based learning can play a pivotal role in enhancing student engagement and motivation because it involves the immersion of learners into the real problem situations, where they are given a chance to engage in peer discussions on problems (Wagino et al., 2024; Kristianto and Gandajaya, 2023; Leatemia et al., 2016; McGuinness and Fulton, 2019). Leveraging digital platforms, students work together to complete various tasks, share their views and negotiate meaning of a problem they discuss, and suggest some solutions in English. Not only does this enhance the language abilities but also enhances confidence in communication (Yu, 2022). Moreover, digital PBL contributes to the acquisition of important digital literacy competencies, including appropriate online interaction, critical assessment of digital facts, and the production of multimodal texts utilizing images, audio, and video (Anggraeni et al., 2023). However, Ultimately, it is evident that these learning moments develop key 21 st -century abilities and ensure that the study of the English language is more relevant, practical, and meaningful to students based on the findings of Boelt et al. (2022).

5.4 Challenges, Teacher Training Gaps, and Curriculum Alignment

Even though implementation of the problem-based learning approach in digital English language syllabuses has plenty of positive effects, this practice also has some drawbacks (Phage et al., 2023). The authors highlighted the fact that not every student has the same level of access to electronic gadgets or reliable internet connections, especially in certain areas of the Global South, which may constrain their involvement and increase the disparity in learning. Simultaneously, Harris et al. (2022) noted that a significant portion of educators have also struggled because of insufficient training or exposure to digital technology and overseeing online PBL lessons. Furthermore, Trullàs et al. (2022) stated that PBL activities are not necessarily easy to incorporate into more conventional, examination-oriented curricula and assessment schemes. There is a necessity to develop more effective policies to combat these issues, including development of digital infrastructure, access provision to a continuous teacher training, and development of more flexible curricula and assessments in order to facilitate innovations in learning.

6. Differences in Adoption across Regions

Recently, scholars from various countries and areas have applied Digital PBL to create English courses that are effective for learners. They use a variety of approaches in designing their courses, each includes some aspects of the local culture and education system.

Asia

Problem-based learning (PBL) is being adopted in Asia within English-language courses, especially at the tertiary level (Han, 2020), in international (Nomura et al., 2023) or bilingual curriculum (Han, 2025), to enhance communicative competence and critical thinking abilities among the students. Nevertheless, because of the persistence of traditional teaching methods and examination-driven evaluation systems in most Asian nations, both instructors and learners tend to concentrate on test performance and memorization -based learning; and so, the application of PBL is not always complete (Matsuyama et al., 2016). Learning

management systems and online discussion platforms are used to facilitate collaborative PBL tasks, yet the presence of digital resources and disparity among teachers in pedagogical understanding of the PBL approach influence the thoroughness and uniformity of PBL deployment across various organizations (Hallinger, 2011).

Europe

Problem-based learning has found a broad application in England as an instructional model in the study of English language and is highly encouraged by the policies of learner-centred education and curriculum reform in Europe (Brom et al., 2010). The English language instruction tends to integrate both interdisciplinary tasks and problem-solving activities, which often involve digital technologies to foster collaboration and intercultural communication (Bijsmans and Versluis, 2020). More effective PBL implementation can be achieved through comprehensive teacher training and institutional support. At present, the application of PBL in the English language curriculum in Europe is gradually shifting towards sustainability, which allows learners to not only acquire English but also to better fit into the changing society (Carrió Llach and Llerena Bastida, 2023).

North America

PBL has a long-standing tradition in English language instruction in North America and is closely associated with constructivism and project based learning approaches (Ting et al., 2019). English language curricula generally focus on inquiry-based learning, critical reading, authentic language use, and seamlessly integrating digital technology such as web research, creating multimedia, and collaborative sites (Sorte & Kim, 2023). Even though PBL is now a widely known concept, standardized tests, disparities in the funds allocated to schools, could hinder its consistent application in various school contexts (Century et al., 2020).

Global South

The introduction of PBL on the English language curricula in the Global South is a trend that is steadily growing, much of which stems out of curriculum reforms, international cooperation or pilot programs (Tugwell, 2020). Yet the dearth of digital infrastructure, teaching materials, and professional development options are significant barriers to the widespread implementation of PBL (Malebese and Tlali, 2020). Supasan (2021), however, has also pointed out that when PBL is connected to local contexts as well as the problems faced by the community, it can make learning English language more meaningful and practical as well as more reflective of the socio-cultural reality of the learners.

7. Future Directions

Future advancements in the context of problem-based digital learning (PBL) within English language curricula now focuses on highlighting the relevance of AI-enabled PBL frameworks and adaptive learning systems (Siripipattanakul et al., 2023). These frameworks and systems facilitate personalized learning trajectories, provide real-time feedback, address the diverse needs of learners, and promote sustainable learning behaviors. Recent empirical evidence further demonstrates that AI-driven adaptive systems are capable of analyzing learner interaction data, dynamically adjusting task complexity, and provide immediate formative feedback that strengthens learner autonomy and improves measurable language performance outcomes (Ratnakaram et al., 2025). Such integration is particularly effective when combined with structured scaffolding strategies and learning analytics dashboards that support both teachers and students in monitoring cognitive, linguistic, and collaborative development. Moreover, according to Boonmoh and Sanmuang (2024), the demand for digital assessment models capable of evaluating students' problem-solving processes, collaborative competencies, language acquisition, and understanding of sustainable development is increasing. Empirical studies increasingly recommend multimodal digital assessment frameworks that incorporate

process-based analytics, peer-evaluation systems, discourse analysis tools, and AI-assisted rubric scoring to capture both learning processes and outcomes more comprehensively.

At the same time, equality, inclusivity, and accessibility must be prioritized to ensure that digitally reformed curricula reduce, rather than widen, learning gaps, thereby contributing to sustainable social and educational development (Brondani et al., 2024). Evidence suggests that effective digital PBL implementation requires universal design principles, multilingual platform interfaces, low-bandwidth accessibility options, and differentiated instructional scaffolds to address the needs of learners with varying levels of technological proficiency. Without these structured supports, digital innovation may inadvertently reinforce existing inequalities. Lastly, researchers emphasize the need for longitudinal and cross-context studies to examine the long-term applicability and effectiveness of digital PBL approaches across diverse educational, cultural, and institutional settings (Malebese, 2019; Chai & Swanto, 2020; McGibbon & Van Belle, 2015). Recent methodological recommendations advocate multi-year mixed-method designs and large-scale quasi-experimental research to generate stronger causal evidence, thereby advancing digital PBL from exploratory practice toward sustained, theory-informed curriculum reform in English language education.

8. Conclusion

To summarize, digital transformation has altered the way in which English language curriculum planning is done making learning more flexible, interactive, and learner-centered due to the application of technology. Problem-based learning (PBL) is an effective and versatile approach to teaching, which allows the students to acquire English language proficiency, digital competence, and future-oriented competencies. To encourage the transition, teachers should be given proper training, policymakers ought to make sure that all students have equal access to digital resources, and researchers must keep on finding useful and sustainable strategies to implement PBL in the instruction of English language.

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